Industrial
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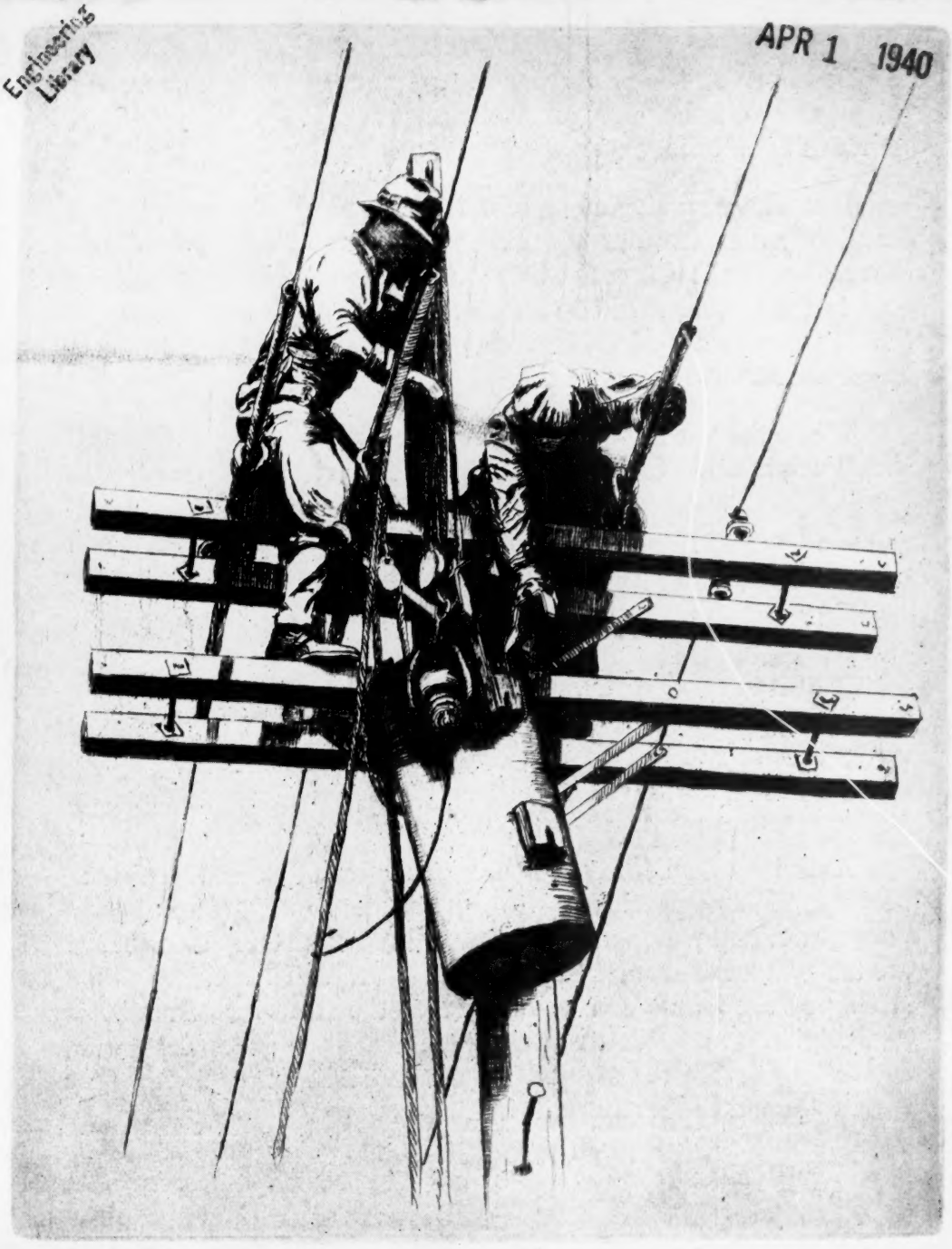

Hanging A Pot

O Vern Ryel

March

Transformer Standards Proposed For Year's Trial *(Page 53)*

1940

On Trial

THE cover of the newly proposed standard for transformers says "published for general comment and criticism." This standard is on trial.

Just as a new airplane motor is put through the works, then completely dismantled, the parts examined for wear or flaw, and the engine rebuilt before delivery; so each new American Standard goes to the testing field of factory and drafting room to find out how it wears in actual use. Every draftsman, mechanic, and customer contributes to the testing of that standard.

When the words "published for general comment and criticism" are erased from the cover of an American Standard, that document is no longer American engineering theory, but American engineering practice. It is continually subject to review and revision to keep this practice in line with new developments.

Standardization is always "on trial."

Will it cut costs? Will it simplify production? Will it improve the product? Will it increase safety? Will it do these things now? Not last year or tomorrow.

If it won't, throw it out and we will work up something better.

American Standards are the crystallization of industrial experience in some particular field. They start in the shop as company practices, which are built into the standardization work of the trade association and the technical society. Then comes a final sifting at the hands of a committee of the American Standards Association on which sit representatives of each group interested in the job, before the standard is turned back again to industry for "comment and criticism" and *use*.

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RUTH E. MASON, *Editor*

This Issue

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March, 1940 **Vol. 11, No. 3**

New Proposed Transformer Standards Issued by ASA for Year's Trial

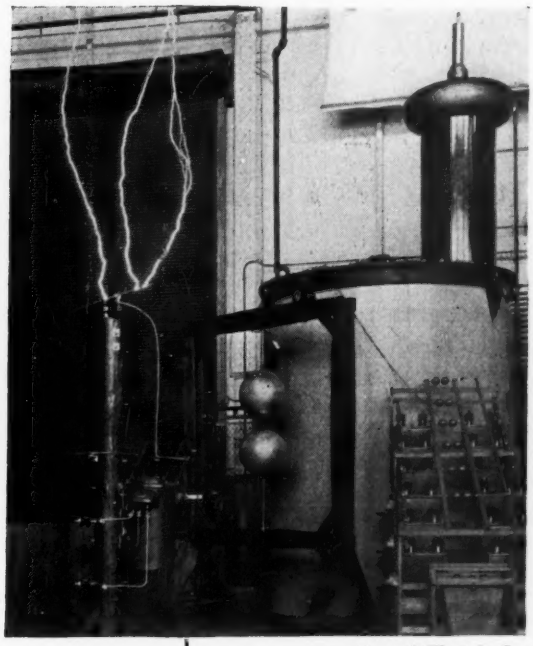
ASA Asks Groups Concerned to Send in Comments and Suggested Changes During 12-Months Trial Period

Proposed Standards Include Test Code and Guides for Operation

by

V. M. Montsinger[1]

Chairman, ASA Sectional Committee on Transformers (C57)



General Electric Co.

Impulse test on pole-type installation of distribution transformer with self-contained protection, one of the tests covered in the proposed new Test Code

A NEW set of proposed American Standards and Recommended Practices for Transformers, Regulators, and Reactors has just been completed by a committee of the American Standards Association. The new standards will combine in one volume considerable new material on standards, a test code, and guides for the operation of transformers, and will be the most complete single publication of its kind ever published.

To obtain comments and criticism from the entire industry, this publication is now being issued as Proposed American Standards and Recommended Practices for trial and study. After a 12-months trial period, it will be submitted to the American Standards Association for approval as American Standards and American Recommended Practices.

Briefly, the outstanding provisions of this publication include separation of the temperature rise from the ambient and total temperature in the Standards in order to avoid confusion; establishment of standard impulse insulation levels; inclusion of enlarged guides for operation of transformers with:

- Recognition that the nameplate rating and output are not necessarily the same;
- A new section permitting short-time overloads for both emergency and recurrent conditions, set up so that the values permitted will not unduly shorten the life of the transformer; and
- The establishment of an average daily ambient temperature of 30 degrees coupled with a maximum ambient of 40 degrees at which transformers may be operated continuously.

The ASA Sectional Committee on Transformers, which is made up of representatives from the American Institute of Electrical Engineers, the National Electrical Manufacturers Association, the Edison Electric Institute, Association of American

[1]General Electric Company, Pittsfield, Mass.

Railroads, and the National Bureau of Standards, has been working for the past six years on the new standards for transformers, regulators, and reactors.

The publication consists of the proposed Standards and proposed Recommended Practices covering a Test Code for transformers and other induction apparatus and Guides for the operation of transformers in service. The Standards are divided into seven sections:

1. Definitions
2. Standards common to transformers, regulators, and reactors
3. Standards for distribution and power transformers
4. Standards for instrument transformers
5. Standards for constant-current transformers of the moving-coil type
6. Standards for induction and step-voltage regulators
7. Standards for current-limiting reactors

The material included in the proposed Standards and Recommended Practices was largely based on the National Electrical Manufacturers Association Transformer Standards, the American Institute of Electrical Engineers Proposed Test Code for Transformers dated October 1931, and AIEE Standards No. 12, Constant-Current Transformers (approved by the ASA as American Standard C57.1-1933); No. 13, Transformers, Induction Regulators and Reactors; No. 14, Instrument Transformers (approved by the ASA as American Standard C22-1925); and No. 100, Recommendations for Operation of Transformers (C53-1932).

The first two sections in the Standards are general, the first containing definitions and the second containing standards applying generally to the various classes of apparatus. The other sections contain material applying only to the particular apparatus covered.

With the idea of having the remaining five sections complete in themselves, each of these sections includes references to all applicable material in the second or general section.

Test Code

The test code previously issued by the American Institute of Electrical Engineers has been enlarged considerably and brought up-to-date. Complete instructions for making electrical tests are given, together with standard connections used in making heat runs. In cases where two or more methods of making tests or corrections are recognized (as, for instance, when correcting the no-load loss to a sine-wave basis) these methods are outlined in the Code.

"Hanging a Pot," our cover picture for this month, shows a distribution transformer, one of the types covered in the new draft standards. The etching is by Orie Van Rye, assistant distribution engineer for the New England Power Service Company, who has been called "the Rembrandt of the utility industry." Mr. Van Rye uses his practical experience as an electrical engineer as the inspiration for his etchings. He has achieved wide recognition as an artist as well as an interpreter of the electrical industry.

The engraving itself was made available to us through the courtesy of the Edison Electric Institute.

Change in Standards and Guides for Operation

The major points of difference between the old and the new Standards are as follows:

1. Arrangement. All available material associated with standards, testing, and operating guides are combined in one volume. The material in the various sections has been rearranged and coordinated.

2. Insulation Levels. Insulation levels for power and distribution transformers, constant-current transformers, instrument transformers, regulators, etc., have been coordinated as far as practicable. In the past, discrepancies have existed in the insulation levels of various types of transforming equipment for corresponding voltage ratings. The same impulse levels are now required for both power and distribution transformers 23 kilovolt rating and above. Formerly the distribution level was below the power level up to 92 kilovolt rating.

Standard insulation levels divided into zones have been established as a basis for dielectric tests rather than basing the dielectric tests on the rated voltage of the circuit to which the transformer is to be connected. The past practice of applying a low-frequency (induced voltage) test of 2.73 times the line-to-neutral voltage to transformers (69 kilovolts rating and above) for operation on solidly grounded neutral circuits has been superseded. It is recognized that from the standpoint of impulses (lightning) the insulation level of transformers should be based on the level of protection that can be provided, rather than on whether or not the neutral of the circuit is grounded. When proper protection is provided

thus a lower level of insulation may be used in the transformer.

3. Impulse Tests. The latest method of making impulse tests is included. The tests are specified by kilovolts instead of by "test gaps" which were in general use from 1933 to 1937.

4. Temperature Rise and Ambient Temperatures. Temperature rise has been separated still further from ambient and total temperature, in order to avoid the confusion which has existed in this connection. Temperature rise determines the amount of material required and, therefore, the rating, which is useful mostly to insure the purchase of transformers on a comparable basis. Ambient temperature and total temperature are involved only in the operation of a transformer and do not affect its rating.

5. Guides for Operation of Transformers. *(a) Rating and Output.* In setting up guides for the operation of transformers, it is recognized that the nameplate rating and the output are not necessarily the same thing; the permissible continuous output with low ambients being more than the rating and with high ambients the output being less than the rating.

(b) Short-Time Overloads. Short-time overloads are permitted, these being specified (1) by oil temperature, up to 8 hours duration of time, and (2) by curves giving the "Times rated load," for times ranging from 2 seconds (short circuit) up to as much as 8 hours.

These overloads are set up for both recurrent and emergency conditions with the intention that the values given will not shorten the life of the transformer more than under normal operating conditions. This is entirely new material, not having been given in AIEE Specification No. 100.

(c) Establishment of Maximum Average Daily Ambient (Air) Temperature. In these schedules the average daily ambient temperature at which a transformer may be operated continuously for long periods of time at rated load is established at 30 C in place of the maximum ambient of 40 C which was given in AIEE Standards No. 13 and Specifications No. 100. While this may appear, at first sight, to be a rather drastic change, it is simply a move to make the operating recommendations agree with average service conditions as they have been indicated by operating experience. It does not mean a derating of the transformer nor an increased cost for usual service conditions. Since overloads which were not permitted under the old Standards are now provided for, more flexible loading of the transformer is possible as may often be required by operating conditions, and it is quite possible that under usual operating conditions, the kilowatt hours output actually may be greater than previously allowed.

The life of transformers in the past has been generally satisfactory and the setting up of an average ambient temperature of 30 C for continuous operation at rated load does not affect transformer ratings required, except in the very rare cases where continuous high ambients exist. Obviously, a transformer which is most economical for average service conditions could not be expected to be suitable for very unusual service conditions, particularly when high ambients are coupled with high load factors.

In comparison with AIEE Standards earlier than 1930, the new Standards are more liberal in that they recognize overloads which probably more than compensate for whatever restrictions might be imposed under some conditions by reducing the standard ambient from 40 C to a daily average of 30 C, coupled with a maximum of 40 C. Since the limitations imposed more nearly correspond to usual service conditions, as they exist, it is intended and expected to prevent misapplication of transformers, yet permitting the maximum safe output.

Copies may be ordered from the American Standards Association, 29 West 39 Street, New York, at 75 cents each.

Proposed Simplified Practice For Paper Food Containers

The Division of Simplified Practice of the National Bureau of Standards has submitted to the industry and others concerned proposed specifications for Heavy-Duty, Round, Nesting Paper Food and Drink Containers and Lids. The recommendations were recently drafted by the Standards Committee of the Cup and Container Institute, Inc., which submitted them to the Division of Simplified Practice.

The simplified list of recommended standard containers covers shapes, capacities, weight per 1000 containers (waxed and unwaxed), the maximum depth of lid seat, maximum bottom recess, and also a standard basis weight of paper for different types of lids.

Mimeographed copies of the recommendation may be obtained from the Division of Simplified Practice, National Bureau of Standards, Washington, D. C.

Revised Recommendation Reduces Number of Sizes of Eaves Trough

The Simplified Practice Recommendation for Eaves Trough and Conductor Pipe has been revised and the changes approved by the industry, according to an announcement by the Division of Simplified Practice, National Bureau of Standards. The revision reduces the sizes of eaves trough by the elimination of the 3½ and 8-inch sizes; adds a 1½-inch diameter plain round conductor pipe; and enlarges the scope of the recommendation to include box and roof gutters and plain ridge rolls. The revision effects an elimination of about 200 items in eaves trough, ridge rolls, and their accessories, and materially reduces the variety of box and roof gutters.

The present revision, like the original edition, which became effective in 1925, establishes a simplified schedule of sizes for eaves trough, conductor pipe, and elbows, etc., and fixes a minimum gage weight for metals used in their manufacture.

Until printed copies are available, mimeographed copies of this Simplified Practice Recommendation (R29-39) may be obtained without charge from the Division of Simplified Practice, National Bureau of Standards, Washington, D. C.

Standards for 40 Canned Vegetables Established

Regulations covering definitions and standards of identity for 40 different canned vegetables have been published in full in the February 28 issue of the *Federal Register*, which may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., at 10 cents a copy. These definitions and standards were formulated as a result of evidence given at a public hearing held last spring, and are being promulgated by the U. S. Department of Agriculture under the Federal Food, Drug, and Cosmetic Act.

Standards Urgent in Wartime, French Association Finds

"The outbreak of war has considerably increased the activity of the French Standards Association (Afnor), and every effort is to be made to increase both the number and the utilization of standards in all lines of manufacturing. Factories are being urged, whenever possible, to make use of existing standards. It is pointed out that in wartime, with the danger of possible destruction or transformation of factories, only the use of standard dimensions and characteristics for the parts of apparatus permits the replacement of parts, if the original manufacturer of non-standard parts finds himself unable to replace them. Moreover, the use of the standard characteristics speeds up production.

"As a matter of urgency, Afnor is to study standards for material required for war purposes, but so far as is possible, this period is also to be utilized for the creation of industrial standards for normal purposes. This new impetus to standardization is expected to prove of particular interest to the electrical industries where much still remains to be done."—*From "Electrical Review," London.*

Committees Reaffirm Simplified Practice Recommendations

The following Simplified Practice Recommendations have been reaffirmed without change by the Standing Committees in charge, the Division of Simplified Practice, National Bureau of Standards, recently announced:

Asphalt R4-36
Classification of Iron and Steel Scrap R58-36
Binder's Board R81-28
Wire Diameters for Mineral Aggregate Production Screens R147-33

All of these recommendations may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., at five cents each.

Beqa – the Oldest Standard

"The oldest standard known is the beqa (a weight, 12.70 and 13.61 grams), found in early Amratian graves in Egypt (7000-8000 BC), and named upon three weights in Palestine. This is often called the gold standard because many of these weights bear the hieroglyph for gold. The names of kings are more frequent on this than on other standards. The lighter and heavier forms were not unified until the 23rd dynasty, though both were used before for royal weights. The system was decimal up to 2,000 beqa, with fractions down to 1/16."—*Encyclopedia Britannica*, "Measures and Weights," Volume 15.

ASA Mining Committee Elects Officers; Takes Action on Standards

MINING standards were reviewed and action taken to start more active work on many of the mining projects at the meeting of the Mining Standardization Correlating Committee of the American Standards Association February 12. Daniel Harrington of the U. S. Bureau of Mines was re-elected chairman of the Committee; Lucien Eaton, American Mining Congress, was re-elected vice-chairman; and Richard Maize, representing the Mine Inspectors' Institute of America, was elected second vice-president succeeding Rush N. Hosler who died last year.

E. A. Holbrook, representing the American Association for Labor Legislation; N. P. Rhinehart, representing the Mine Inspectors Institute of America; and G. B. Southward, of the American Mining Congress are the other members of the MSCC Executive Committee.

A new project on Safety Code for Quarry Operations was recommended to the ASA Standards Council to cover safety provisions for quarry, open pit, and strip mining operations. The recommendation was made following a canvass of the organizations concerned, which indicated that a majority were in favor of the proposed work.

Members of the MSCC agreed that there is a real need for an up-to-date standard for wire rope to be used in mines, and voted to ask the American Mining Congress which is acting as sponsor for the ASA Committee on Wire Rope for Mines (M11) to consider undertaking a revision of this standard.

Draft Standard for Graphs Now Out for Comment

A draft standard for engineering and scientific graphs is now being circulated for criticism and suggested changes before it is submitted to the technical committee for approval.

The work on uniform standards for graphs has been going on since January, 1914, when the need for uniform presentation of information, numerical facts, and other data by means of charts, graphs, and diagrams was brought to the attention of the American Society of Mechanical Engineers. The World War, however, interfered with the activities of the ASME committee. In 1925 the American Standards Association was asked to undertake the work, and the ASA Committee on Standards for Graphic Presentation was organized in 1926. Two standards have already been approved as the result of this committee's work: Time Series Charts—A Manual of Design and Construction (Z15.2-1938); and Engineering and Scientific Charts for Lantern Slides (Z15.1-1932).

The new proposed standard covers design and layout; construction of original graphs to be used for reproduction; and handling of finished illustrations; and it contains many illustrations.

Dr. W. A. Shewhart, of the Bell Telephone Laboratories, Inc., New York, is chairman of Subcommittee 4 on Engineering and Scientific Graphs which prepared the proposed standard.

Copies may be obtained from, and suggestions for changes sent to, the American Society of Mechanical Engineers, 29 West 39 Street, New York.

Any changes proposed will form the basis for a final revision before the draft standard is submitted to the sectional committee. After approval by this committee, it will be submitted to the American Society of Mechanical Engineers, sponsor, and then to the American Standard Association for final approval.

Publish Sixth Edition Of Building Exits Code

A new edition of the American Standard Building Exits Code is now available. The revision, which was approved by the American Standards Association in January, provides that hotels and apartment houses must have not less than two means of exit on every floor, including basements, except that one and two-story buildings may, under certain circumstances, have a single exit.

The revision also provides that electrical installations shall be in accordance with the National Electrical Code.

The Building Exits Code includes standards for stairways, fire escapes, doors and other exit facilities, and requirements for exits and other means of promoting safety to life in schools, department stores, factories, hospitals, sanitariums, places of public assembly, hotels and apartment houses, and office buildings.

It is now in its sixth edition, and was developed by a committee working under the procedure of the American Standards Association sponsored by the National Fire Protection Association.

Copies of the Building Exits Code (A9-1940) are available from the American Standards Association at 75 cents each.

ASTM Structural Timber Grading Standard Now Approved by ASA as American Standard

by

L. J. Markwardt[1]

The development and significance of structural timber grading are discussed in this article by Mr. Markwardt.

The American Standard Specifications for Structural Wood Joist and Plank, Beams and Stringers, and Posts and Timbers, he says, come near meeting the ideal purpose of an efficient structural timber grading specification. This purpose he defines as follows: "To classify timber of any species into quality classes or grades by properly and adequately limiting the permissible defects and strength factors, to the end that definite minimum strength is assumed, and that maximum efficiency in utilization is obtained."

THE recently adopted American Standard for Structural Wood Joist and Plank, Beams and Stringers, and Posts and Timbers approved by the American Standards Association last October is an excellent example of evolution and development rather than spontaneous origin.

Significant developments have been traced by J. A. Newlin[2] to a beginning as far back as 1891, when B. E. Fernow was chief of what was then called the United States Forestry Division.

The forestry program inaugurated at that early date outlined as one of its major objectives a more complete determination of the strength properties of American timbers.

The earlier studies on wood, some of which were quite comprehensive as regards properties investigated, were apparently more suggestive than conclusive because of limitations in the underlying purpose, and neglect of factors which are now known to influence the strength of wood. Even this previous work, however, had an important bearing on subsequent test procedure, and served to reveal the broader engineering purpose to be served. In the background also were the even earlier contributions from American and European investigators.

Function of Structural Grading Specifications

The development of structural timber grades is closely and intimately related to safe working stresses, because in designing a structure which must carry definite loads it is essential that the strength of the materials be definitely known and that any variation in the quality should be determinate.

Newlin[3], who is responsible for much of the technical background on which the present grading of structural timbers is based, has emphasized that in most timber design it is the poorest timber likely to be found in any grade that is the controlling factor, and in that assigning working stresses primary consideration is given to the one-fourth of the pieces lowest in strength. Chaplin and Nevard[4], taking up the same thought, state that it cannot be overemphasized that the average breaking strength of a number of test specimens is not a quantity that the designer can apply di-

[1]In charge, Division of Timber Mechanics, Forest Products Laboratory, Forest Service, U.S. Dept of Agriculture. The Laboratory is maintained at Madison, Wis, in cooperation with the University of Wisconsin.

[2]1927. "Origin and Development of ASTM Tests and Specifications for Timber." *Proceedings of International Congress for Testing Materials*, Amsterdam, Vol II, p 567-580.

[3]1927. "Unit Stresses in Timber." *Amer Soc Civ Engrs Trans* 91; 400-407, illus (Discussion pp 408-440).

[4]1937. Chaplin, C. J. and Nevard, E. H. *Strength Tests of Structural Timbers*. Part 3, Forest Products Research Records No. 15. Department of Scientific and Industrial Research (England).

rectly, and that the working stress must be based on the strength of the weakest member that may be used, since the latter determines the strength and safety of the structure. Economy of material is obtained when all units are stressed to a figure approaching the allowable maximum, and this can only be done when the material is of uniform quality. Not only are there variations in the strength of clear wood, but also the strength is affected in varying degree by numerous features such as knots, shapes, cross grain, and moisture content.

It is the function of an efficient structural-timber grading specification to classify timber of any species into quality classes or grades by properly and adequately limiting the permissible defects and strength factors, to the end that definite minimum strength is assumed, and that maximum efficiency in utilization is obtained.

It is not practical and perhaps it would be too ambitious to expect to meet this desideratum in its entirety, but the present American Standard and ASTM specifications are far along in approaching this ideal. Far from dealing with an outmoded material, these standards, together with other research developments in modern connectors and in the laminated construction, have opened new horizons in timber construction.

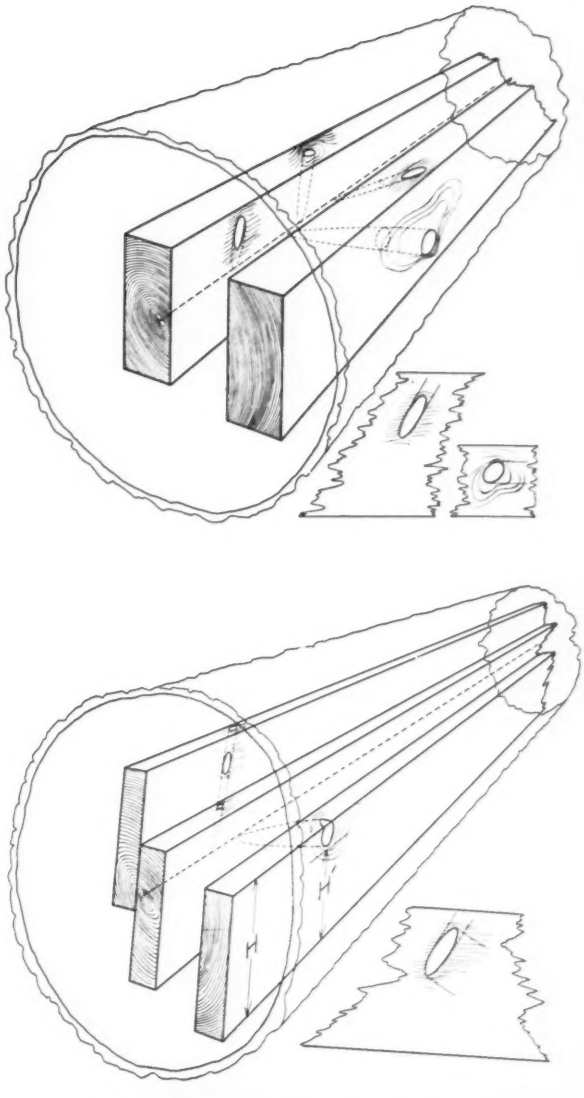
Technical Background

Back of the preparation of grading rules and the assignment of working stresses must be adequate data and knowledge of the strength properties and variability of clear wood, of the strength of structural timbers containing defects, of the influence on strength of various defects, of the influence of seasoning and of moisture changes in service, of manufacturing practice, of growth conditions, and of the mechanics of tree growth. Much of these data are now available and published in sources such as the following:

1. U.S. Department of Agriculture Technical Bulletin 479, Strength and Related Properties of Woods Grown in the United States.
2. Forest Service Bulletin 108, Tests of Structural Timbers.
3. U.S. Department of Agriculture Department Circular 295, Basic Grading Rules and Working Stresses for Structural Timbers.
4. U.S. Department of Agriculture Miscellaneous Publication 185, Guide to the Grading of Structural Timbers and the Determination of Working Stresses.
5. American Society for Testing Materials, Proceedings 24, Structural Timbers: Defects and Their Effect on Strength.

The importance in the specifications of adequate consideration of manufacturing practice in relation to mechanics of tree growth, taking into account factors such as the nature of knots and their method of formation, cannot be over-emphasized. Some individual manufacturers as well as lumber associations have contributed materially to insuring the practicability of the rules.

One of the first structural grading rules based on actual tests and incorporating all essential



Above: Phantom drawing of log showing the form and shape knots may have when appearing on the different faces of boxed-heart and side-cut structural timbers

Below: Phantom drawing of log showing the form and shape knots may have when appearing on the different faces of boxed-heart and side-cut joist and plank

principles of a structural grade was that presented in Forest Service Bulletin 108, published in 1912. In these rules the beam was divided into three volumes or zones, representing different degrees of intensity of stress. Volume 1 comprised the lower one-fourth of the height of the beam at the center half of the length, where tension stress is most severe; volume 2 the upper one-fourth of the height of the beam at the center half of the length, where compressive stress is the most severe; and volume 3 the remainder of the timber. Larger knots were allowed on the compression side of the beam where they are less injurious than on the tension side, with the assumption that the beam would be used with this side up.

The next significant advance in structural grading was the establishment of the principles set forth in U.S. Department of Agriculture Department Circular 295, published in 1923. These principles covered the use both as beams and as posts. In beams no distinction was made between the upper and lower sides. These principles were incorporated in the structural grade examples adopted by the industry in connection with American lumber standardization, and published in Simplified Practice Recommendation R16-29 of the U.S. Department of Commerce, 1929. Concurrently the ASTM structural grades, sponsored by Committee D-7 and the corresponding AREA grades were established.

In 1934 structural grading received another contribution with the publication of *The Guide to the Grading of Structural Timbers and the Determination of Working Stresses*, by T. R. C. Wilson. This guide is not a standard specification. It rather serves a threefold purpose of providing a technical basis for the establishment of specifications such as the present American Standard, permits the industry to establish grades of any desired strength-ratio, and gives the timber user a means of evaluating any material to establish the design stresses it is capable of taking.

Practical Considerations Involved

As previously mentioned, practical considerations frequently must be taken into account which limit the ultimate theoretical efficiency that might otherwise be possible in establishing a standard specification. For example, the compressive strength of wood is affected less by a knot of a given size than is the tensile strength. Hence larger knots could be used on the upper or compressive side of a beam with increased efficiency in utilization, but practical considerations suggest grading so that the beam can be used either side up, rather than in one definite position, the reversal of which might result in failure. Again, greater efficiency might be obtained with a more elaborate method of evaluating the size of knots, but such evaluation would be more complicated than the present simplified system, and hence less

Producers and Users Cooperate In ASTM Timber Committee

TWO timber standards were approved recently by the American Standards Association. One of these standards, discussed in this article by Mr. L. J. Markwardt, covers Specifications for Structural Wood Joist and Plank, Beams and Stringers, and Posts and Timbers (06-1939; ASTM D 245-39). The other covers Specifications for Round Timber Piles (07-1939; ASTM D 25-37). Both of these standards have been under-going a long period of trial and revision in ASTM Committee D-7 on Timber, with which prominent using groups such as the American Railway Engineering Association and also timber producers have been actively cooperating.

The standard specifications for structural wood joist and plank were first published as tentative in 1926, were adopted as standard by the ASTM in 1927 but were withdrawn and republished as tentative from 1936 to 1937. They were again adopted by the ASTM as standard in 1937, and were editorially revised and rearranged in 1939.

The standard specifications for round timber piles were published as tentative from 1915 to 1920, adopted as standard in 1920, but withdrawn and republished as tentative from 1930 to 1937, when they were adopted as standard.

Now that both standards have been approved by the American Standards Association as American Standards it is expected that the British Standards Institution will give them careful consideration as a basis for the preparation of British Standards.

Copies are available at 25 cents each from the American Society for Testing Materials, 260 South Broad Street, Philadelphia, or from the American Standards Association. ASA Members are entitled to 20 per cent discount on all approved American Standards ordered from the ASA office.

practical. A discussion of these factors is presented in the previously mentioned article entitled: "Structural Timbers: Defects and Their Effect on Strength" (ASTM, 1924)

Working Stresses

Safe working stresses are an essential corollary of structural grading. Tables of working stresses abound in engineering literature, and while marked improvement in them has taken place, there is still much room for modernization, and for correlating working stresses with structural grading.

Safe working stresses for timber are based both on tests of small clear specimens which afford average values of the inherent strength of the different species and a measure of variability, and on tests of large timbers which establish the influence of defects. The determination of safe working stresses involves further the adjustment of test values to meet the conditions of service. This adjustment requires consideration of (*a*) the loss in strength from defects, (*b*) the effect of long-continued loads, (*c*) the variability of individual pieces from the average, (*d*) the possibility of slight accidental overloading, and (*e*) species characteristics.

The effect of these factors is to necessitate a lower strength value for practical use conditions than the average value from tests of small clear specimens. Their combined effect may be embodied in a single factor, sometimes erroneously called a "factor of safety," which can be applied to averages from tests on small clear specimens to obtain safe working stresses, making in addition due allowance for species characteristics. It is evident that the larger part of this factor is required to correlate laboratory test results with actual conditions of use, and only a small part may be considered a true factor of safety.

The belief that a timber with a so-called "factor of safety" of 3 or 4 will carry three or four times the load for which it is designed is erroneous. As a specific example, the average modulus of rupture of green Sitka spruce, based on tests of small clear specimens free of defects, is 5,760 pounds per square inch and the basic working stress for extreme fiber in bending for a grade of material that permits defects that reduce the strength by one-fourth is 1,100 pounds per square inch, which shows a factor of $5\frac{1}{4}$. This factor of $5\frac{1}{4}$ is not a "factor of safety" but consists of successive reductions of one-fourth for defects, one-fourth for variability, seven-sixteenths for long-time loading, and two-fifths to provide an actual factor of safety of $1\frac{3}{5}$. The average timber has a factor of safety of about $2\frac{1}{4}$ for long time loading. The application of loads which would produce stresses only one and one-half times the working stresses would be expected to cause occasional failures if the loads were left on for any great length of time.

The structural grades incorporated in the standard are designated by the extreme fiber stress they are designed to carry, by the kind of timber according to use (joist and plank, etc.) and by the species name, the latter sometimes with a prescript. Within limits, it is possible to set up grades for any species to take any desired stress by appropriately varying the defects permitted to meet any desired grade-strength ratio. While the standard establishes a variety of stress grades for the more important species, it could be extended at will to cover other species and other grade-strength ratios.

It should be noted that the stresses for the various American Standard structural grades apply to timbers used in continually dry locations, or used under other conditions where deterioration is not expected. Higher initial strength than would otherwise be required is desirable in timbers exposed to decay or other deterioration and to delay replacement. It may be provided by arbitrarily increasing the size of timbers, or by using lower design stresses. This factor is mentioned because of its importance, but it is not the purpose of this paper to discuss it fully.

Acknowledgments

The present American Standard, being a development extending over many years, includes contributions from a great number of individuals and organizations. Any attempted enumeration is most certain to be incomplete. Among the more important, however, are the National Lumber Manufacturers Association, the West Coast Lumbermen's Association, ASTM Committee D-7 on Timber, AREA Committee VII on Wooden Bridges and Trestles, the Central Committee on Lumber Standards, and the Forest Products Laboratory. Among individuals, Dr. Hermann von Schrenk, Professor C. E. Paul, C. J. Hogue, J. A. Newlin, T. R. C. Wilson, W. E. Hawley, and Arthur T. Upson may be mentioned, but many others also made important contributions.

Progress in School Lighting

"Surveys indicate that realization of the recommendations carried in the American Recommended Practice of School Lighting is at least from 10 to 20 per cent. That is progress!"—*Illuminating Engineering, January, 1940.*

1939 ASTM Book of Standards Includes Tentative Standards

The 1939 Book of ASTM Standards is now available in three volumes, and includes both approved ASTM Standards and ASTM Tentative Standards. This takes the place of the annual publication of a Book of Tentative Standards and a Book of Standards published every three years. The new combined publication will be issued every three years with extensive annual Supplements to keep them up-to-date.

The three volumes cover the following subjects:

Part I, Metals—Ferrous and non-ferrous metals, except methods of chemical analysis; also includes general testing methods.

Part II, Nonmetallic Materials—Constructional—Cementitious materials, concrete, masonry building units, ceramics, pipe, timber and preservatives, paints, road materials, water-proofing materials, soils, general testing methods.

Part III, Nonmetallic Materials—General.—Fuels, petroleum products, electrical insulating materials, rubber, textiles, soaps and detergents, paper, plastics, water, general testing methods, thermometers.

Three tables of contents list the items included in the general materials covered; give a complete list of all items in each Part by numeric sequence; and cover by subject the tentative standards which are published in the back section of each Part.

Part I gives in their latest approved form 298 specifications, tests, and definitions covering ferrous and non-ferrous metals. There are 351 standards and tentative standards in Part II, covering widely used nonmetallic materials of interest in construction or relating directly to construction problems. Part III includes standards in many fields such as petroleum products, textiles, rubber, electrical insulation, coal and coke.

Copies of the Book of Standards are available from the American Society for Testing Materials, 260 S. Broad Street, Philadelphia, Pa. Prices are $22.00 for all three parts in cloth binding; $15.00 for any two parts; and $8.00 for one part. Supplements, which will be issued for each part in 1940 and 1941, will be $7.00 for all three parts; $5.00 for any two parts; and $3.00 for one part. For half-leather binding add $1.00 for each Part and each Supplement.

First Spanish Standard Now in ASA Library

The first standard to be received from Spain since the Spanish war is now available in the American Standards Association Library. The standard is on paper sizes, is published in Spanish, and was received from the Asociacion Espanola de Normalizacion, Spanish national standardizing body.

The regular exchange of information carried on by the ASA with other foreign national standardizing bodies has now been established with the Spanish organization. In the future, the American Standards Association will receive copies of all new Spanish standards, and the Spanish standardizing body will receive copies of approved American Standards and of INDUSTRIAL STANDARDIZATION.

The new Spanish standard on Paper Sizes may be ordered or borrowed from the American Standards Association.

War Brings Calls for Standards, Australian Association Reports

The Library of the Standards Association of Australia is being called on to help in the process of speeding up industry for the war, and is finding itself pushed to the limit with requests for standards to meet industry's specifications, the SAA reports. Except for the fact that the Australian requests for information are credited to "firms who are forced to establish new manufactures," the SAA description of its activities might have been written by the American Standards Association about its own Library during one of its more pressing periods of activity. The Australian Association says:

"Day after day the Standards Librarian is besieged with requests for information by firms who are forced to establish new manufactures. The telephone keeps up a relentless bombardment of queries for different standards: standard apparatus for the measurement of noise; standards for aeroplane dopes, aeroplane fabrics; steels and still more steels, steels for aeroplanes, steels for munitions, steels for motor cars, steels which have previously been imported from Germany and which today must be manufactured at home; bolts and nuts to replace worn ones in imported machinery; paints to fulfill Defence Department requirements—gray, olive green, and drab; synthetic resins; plaster of Paris; friction tape; metals of all kinds, nickel silver, Babbit metal, brass, copper and bronze—sheets, bars and strips; the effect of coke breeze on steel when used for reinforced concrete; the testing of spark plugs; the equivalent Brinell Hardness Numbers to Vickers' Pyramid Numbers. And so it goes on!

"The manufacturer must at least be thankful that he can, in most cases, refer to definite specifications of what is wanted."

New American Standard Correlates Requirements for Test Sieves

Compiles in one standard the specifications for fine and coarse sieves, and for perforated metal screens, as well as dimensions and tolerances for sieve frames, and methods of calibrating sieves, and of presenting test data

by

Lincoln T. Work[1]

Chairman, ASA Committee on Specifications for Sieves for Testing Purposes

LATE in 1931, a committee was organized by the American Standards Association to work on an American Standard for Sieves for Testing Purposes under the joint sponsorship of the American Society for Testing Materials and the National Bureau of Standards. After extensive consideration of its differences of opinion, the committee finally reached an agreement and its recommendations were adopted last year by its sponsors,[2] recommended to the American Standards Association for approval, and approved by the ASA as American Standard (Z23.1-1939).

The scope of the new standard and its contribution toward solution of sieving problems are indicated in the following summary by the committee:

1. It includes within one standard the specifications for fine and coarse sieves, perforated metal screens (sieves), dimensions and tolerances on sieve frames, calibration of sieves, and representation of data; but does not include requirements as to the method of agitation of sieves.

2. It includes five new sieves in the coarse-sieve range which permits an extension of the fourth root of two series.

3. Sieves of the fine series are designated by their nominal size of opening in microns with a corresponding sieve number in parenthesis.

4. Tolerances and limits have been revised on the basis of experience.

5. Wire diameters have been expressed in terms of upper and lower limits without stating a nominal wire diameter.

At the time the committee undertook its work, there were in this country several sieve standards, not differing greatly but causing considerable confusion. The Tyler Series and the U. S. Sieve Series were in common use in the fine sizes. There were also standards for coarse sieves in these two series, as well as for perforated plate. Each field in which sieves were used, and sometimes even different groups within a field, chose its own standards. Mining engineers were in agreement on the standards they used, but highway departments differed from state to state. Coal producers differed in their requirements from aggregate producers, while other groups found none of these standards adequate for their close-sizing problems.

Unfortunately there was no formula to bring these into agreement. The entire emphasis was placed on specifications for apertures and wires, and their tolerances; but the equally important problems of sieving procedure and calibration were not standardized. Under the circumstances, the experimental data available was inadequate for establishing certain essential relationships. Because sieving results depend in a very complex way upon a great many elements of the sieve or screen, upon many characteristics of the material being sieved, and also upon sieving procedure, it was not possible in general to correlate sieving results made with one sieve or screen with those made with another sieve or screen. This made it difficult to prepare proper specifications for sieves. With the coarser sieves the problem resolved itself into correlation of data obtained through the use of round-hole punched plate with data obtained through the use of square-aperture wire sieves. For the normal irregular shapes and for pebbles, some correlation could be effected, but lack of quantitative data on shapes prevented adequate general correlation.

Although a great deal of constructive work had

[1]Department of Chemical Engineering, Columbia University, New York.

[2]This standard was approved by the American Society for Testing Materials as ASTM E11-39.

been done by the sieve manufacturers, the National Bureau of Standards, and the Milling Committee of the American Institute of Mining and Metallurgical Engineers during the nineteen-twenties, there still remained some confusion from the previous period of random, and sometimes misdirected, development of new sieve scales.

At the time that the American Standards Association committee was formed, there was under consideration a possible international sieve standard. The problem of an American Standard, therefore, had become acute. Fortunately, practice in this country had been relatively uniform in comparison with the standards prevailing on the continent of Europe. Both of the American fine series followed the fourth root of two (1.19) as the ratio between the aperture of one sieve and that of the next larger. The base apertures were so chosen in both the Tyler and the U. S. Series that there was only about a one or two per cent difference in corresponding apertures. There was some difference, however, in the mesh designation of certain sieves, based upon the choice of wire diameter. Some sieves were manufactured from wire drawn to sizes having a definite relation to sieve aperture, while others were made from commercially available sizes. The departure from standard in the latter case was not great enough to be outside of the tolerance limits, however, and it was contended that there was no particular merit in drawing wire especially for each grade of sieve cloth, as wire is deformed in weaving.

In contrast to these conditions, there was in Europe a diverse group of ratios of apertures, including the tenth root of ten, and in some cases arbitrary scales without constant ratio. The British standard (BSI No. 410-1931) was not far from American practice; but the older British standard (that of the Institution of Mining and Metallurgy) used such large wire diameters that the sieving area was actually much reduced.

In its consideration of a sieve standard, the ASA

Producers and Users Worked On New Sieve Standard

When ASA Committee Z23 on Specifications for Sieves for Testing Purposes was organized in 1931 it included 38 members distributed between producers, users, and those having a general interest in the subject. Changes and additions brought the membership of the committee to 40 at the time of the final vote. Officers of the committee during the entire period of its deliberations were:

L. T. Work, American Society for Testing Materials, *Chairman*

F. H. Jackson, U.S. Department of Agriculture, Bureau of Public Roads, *Vice-Chairman*

L. V. Judson, National Bureau of Standards, U.S. Department of Commerce, *Secretary*

Members of the committee are:

American Society for Testing Materials, (Sponsor) *E. E. Eakins; O. O. Malleis; Dr. L. T. Work*
National Bureau of Standards, U. S. Department of Commerce, (Sponsor) *Lewis V. Judson*
American Association of State Highway Officials, *H. S. Mattimore*
American Ceramic Society, *Arthur S. Watts*
American Chemical Society, *R. P. Allen; R. L. Hallett; G. S. Haslam*
American Concrete Institute, *J. C. Pearson*
American Foundrymen's Association, *H. Ries*
American Institute of Mining and Metallurgical Engineers, *Charles E. Locke; J. B. Morrow; Arthur F. Taggart*
American Refractories Institute, *Louis J. Trostel*
American Society of Civil Engineers, *D. A. Abrams; Chester M. Everett*
American Society of Mechanical Engineers, *R. M. Hardgrove*
American Water Works Association, *Gordon M. Fair*
Association of American Railroads—Engineering Division—Construction and Maintenance Section—Masonry Committee, *Meyer Hirschthal*
Canadian National Research Council, *R. H. Field*
Electric Light and Power Group, *W. E. Caldwell, A. B. Morgan (alt.)*
Gypsum Association, *C. K. Roos*
Harrington & King Perforating Co., *F. P. Hutchinson*
Hendrick Manufacturing Company, *B. G. Shotton*
Institute of Paint and Varnish Research, *G. G. Sward*
Multi-Metal Cloth Co., Inc., *Siegfried Stern*
National Coal Association, *W. A. Richards*
National Crushed Stone Association, Inc., *A. T. Goldbeck*
National Lime Association, *John W. Stockett, Jr.*
National Sand and Gravel Association, *Stanton Walker*
National Slag Association, *Fred Hubbard*
Newark Wire Cloth Company, *L. C. Campbell*
Portland Cement Association, *F. R. McMillan*
Precision Scientific Company, *Walter W. Pitann*
Technical Committee of Producers of Electric-Furnace Abrasives, *Henry R. Power*
W. S. Tyler Company, *G. A. Disbro*
U. S. Department of Agriculture, Bureau of Public Roads, *F. H. Jackson*
U. S. Department of Interior, Bureau of Mines, *W. A. Selvig*
U. S. War Department, Ordnance Department, *C. G. Storm*

committee endeavored to formulate its specifications so that apertures, wire sizes, frame sizes, tolerances, and calibration should be such that sieves meeting the requirements of the standard would yield accurate results, would give good serviceability, and could be used interchangeably. These objectives were considered in the light of what the manufacturers of sieves could do in weaving cloth without prohibitively costly rejections of large areas of such cloth.

The new standard represents the results of the committee's deliberations and except for the fact that the committee was not in a position to include specifications as to sieving procedures, covers quite comprehensively the objectives outlined.

In addition to the specifications, the standard includes requirements that each sieve (except the 3-in. sieve) shall bear a label marked with the following information:

- the designation of the sieve (the nominal size of the opening in inches for the coarse series, and the micron designation or the U. S. Standard Sieve Series Number for the fine series)
- the name of the series (for example, "U. S. Standard Sieve Series," "American Standard Series," or a specific manufacturer's series)
- the name of the manufacturer or responsible distributor
- the opening in inches and millimeters

An Appendix outlines a method of calibrating woven wire cloth sieves, and tells how to present test data.

The American Standard Specifications for Sieves for Testing Purposes (Z23.1-1939; ASTM E11-39) is available from the ASA at 25 cents per copy.

Rotating Electrical Machinery Standards to Be Revised

A revision of the American Standards for Rotating Electrical Machinery (C50-1936) is now being planned by the ASA committee on rotating electrical machinery, and active work will be taken up during the next few months, it is expected. A large number of recommendations for revision have already been received. These are being compiled and will be circulated to the committee soon.

The standards include requirements for direct-current, synchronous, and induction machines; synchronous converters; and a-c and d-c fractional horse-power motors.

The committee invites all who have recommendations for changes in the standards to send their suggestions to E. B. Paxton, secretary of ASA committee C50, General Electric Company, Schenectady, N. Y., so that they may be included in the circulated material.

Copies of the American Standards for Rotating Electrical Machinery are available at $1.30 each.

Standards for Canned Peas Are Established

Regulations establishing definitions and standards of identity, quality, and fill of container for canned peas, based on evidence taken at a public hearing which began April 17, 1939, have been promulgated by the U. S. Department of Agriculture under the Federal Food, Drug, and Cosmetic Act.

The regulations become effective May 24, 1940. Details are published in the February 24 issue of the *Federal Register*, which may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., at 10 cents a copy.

New York Safety Council To Hold Annual Meeting

The Eleventh Annual Safety Convention and Exhibition of the Greater New York Safety Council will be held April 16-18 at the Hotels Pennsylvania and Governor Clinton, New York. The 48 sessions will cover industrial safety engineering; industrial health promotion; commercial safety, with special reference to hospitals, hotels, and mercantile establishments; home safety; school and recreational safety; and street and highway safety.

A number of the sessions have a direct bearing on subjects covered by work now going forward in committees of the American Standards Association. Some of these are:

- Slips and falls, Tuesday April 16, 2:00 p. m.
- Fire prevention, Wednesday, April 16, 10:00 a. m.
- Elevators, Wednesday, April 17, 10:00 a. m.
- Building management, Wednesday, April 17, 2:00 p. m.
- Occupational diseases, Thursday, April 18, 10:00 a. m. and 2:00 p. m.
- Industrial accident investigation, April 18, 2:00 p. m.
- Industrial eye protection, Thursday, April 18, 10:00 a. m.

Members of the ASA are invited to attend the sessions. Copies of the program are available from the ASA.

United States National Committee of IEC Names C. H. Sharp Honorary Chairman

by

H. S. Osborne

Vice-president and Treasurer,
U. S. National Committee, IEC

DR. CLAYTON H. SHARP, president of the United States National Committee of the International Electrotechnical Commission since 1924, was given its highest honor by the USNC at its meeting December 12 when it named him honorary president to succeed the late Dr. Arthur E. Kennelly.

Dr. Sharp's outstanding career in physics and electrical engineering and his contribution over a long period of years to international standardization make it appropriate that this high honor should be paid him. He is inventor of a number of instruments for electrical and photometric measurements, and author of many scientific papers. From 1914 to the time he retired in 1933, he was vice-president of the Electrical Testing Laboratories.

Dr. Sharp has had a long career in the USNC, having been a member since its foundation in 1907, having served as secretary from 1921 until his election as president in 1924, and having continued as president since that time. As an officer of the United States National Committee over this long period of years he has exercised a great influence on the development of international electrical standards and in the formulation of the policy of the United States Committee on the many questions which have arisen. He has represented the United States at a large number of international meetings. These include 11 conventions of the International Electrotechnical Commission, his first experience as an international delegate having been at Turin in 1911. Since that first meeting, he has been official delegate at the conference at Berlin in 1913; Geneva 1922; London 1924; The Hague 1925; New York 1926; Bellagio and Rome 1927; Stockholm 1930; Scheveningen and Brussels 1935; Paris 1937; and at the most recent conference at Torquay in 1938.

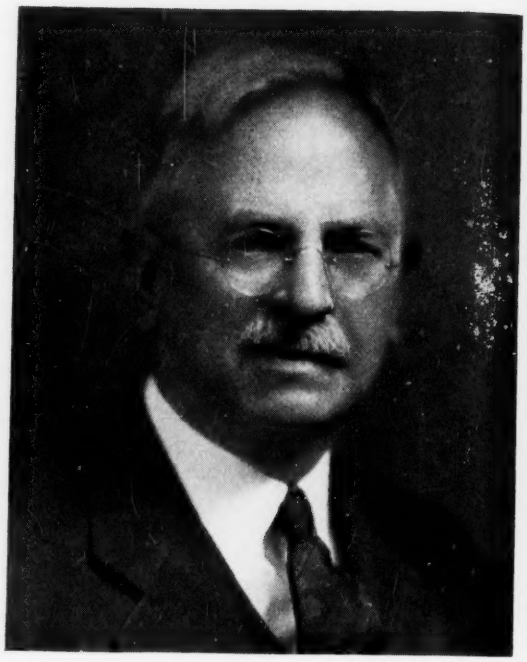


Photo by Bachrach

Dr. Clayton H. Sharp

Dr. Sharp also has an international reputation as a result of his work with the International Commission on Illumination. He was president of the United States National Committee of the ICI from 1914 to 1928, and has been United States representative at many of its international conferences.

He is a member of the American Physical Society, the American Association for the Advancement of Science, the American Institute of Electrical Engineers, the Optical Society of America, the Societe Francaise des Electriciens, and is past-president of the Illuminating Engineering Society.

In the course of this long and varied work, Dr. Sharp has of course made friends all over the world. Those who have had the privilege here of being associated with Dr. Sharp in the United States National Committee can testify to his breadth of wisdom and experience, his unfailing

sound commonsense, and the pleasure which they have personally in being associated with him in this constructive work. As Honorary President he will be in a position to continue his important contribution to the advancement of international standardization in the electrical field.

USNC Adopts Resolution Of Appreciation

WHEREAS, Dr. Clayton H. Sharp has for many years given of his time and ability freely and fruitfully to the work of the International Electrotechnical Commission, and in particular to the work of the United States National Committee of that Commission, having been a member since its formation in 1907; and

WHEREAS, Dr. Sharp has served with great distinction as an officer of the United States National Committee of the IEC, having been secretary from 1921-1924 and president from 1924 to the present time; and

WHEREAS, In the course of this long service he has ably represented the United States as a delegate at many meetings of the International Electrotechnical Commission, beginning at Turin in 1911 and running down through a long series of meetings to that at Torquay in 1938, be it

Resolved, That on the occasion of his retirement as president of the United States National Committee of the IEC the members of that Committee wish to express their high appreciation of his long, faithful, and very valuable service to the cause of international standardization and to the work of the United States National Committee of the IEC and the personal pleasure which they have had in being associated with him in this work throughout the years; and be it further

Resolved, That the members of the Committee wish to express their deep satisfaction that he will continue to be associated with the work and with them by virtue of his acceptance of the office of Honorary President of the Committee; and be it further

Resolved, That a copy of this resolution be spread on the minutes of the Committee and that copies be sent to Dr. Sharp and C. leMaistre, Executive Secretary of the IEC.

Manufacturers Agree on Ratings For Performance of Boilers

The Institute of Boiler and Radiator Manufacturers, consisting of manufacturers of cast-iron low-pressure heating boilers and cast-iron radiators, has adopted a common yardstick for measuring output based on actual boiler performance rather than on boiler dimensions, according to an announcement in the January issue of the *Bulletin* of the Heating, Piping, and Air Conditioning Contractors National Association.

During the last 18 months the manufacturers have been engaged in testing boilers according to the provisions of the I-B-R Testing and Rating Codes, and expect to use I-B-R ratings during 1940 on boilers having grate widths not exceeding 20 inches.

"This decision marks a long step forward in permitting the equal comparison of different makes of boilers for home heating," says Anthracite Industries, Inc., which helped to establish the ratings.

The term "I-B-R Rating" means that the manufacturer has measured the output of his boiler according to a formula which has the approval of the manufacturers who produce a large percentage of all cast-iron low-pressure heating boilers; that the data on which such rating is based has been reviewed by the Institute of Boiler and Radiator Manufacturers; and that a license for the use of the Rating has been issued by the Institute.

"By this means the confusion and uncertainty which has surrounded the use of such terms as 'EDR Rating,' 'Net Load,' 'Radiator Load,' 'Installed Radiation,' 'Rated Output,' 'Guaranteed Load,' 'Commercial Rating,' etc., will be eliminated," the *Bulletin* says.

Ratings will be expressed in terms of

1. Gross I-B-R- output in Btu
2. Net I-B-R rating in Btu
3. Net I-B-R rating—square feet of steam and water

Manufacturers will supplement these ratings with conversion tables which will simplify selections of proper size water boilers, the *Bulletin* explains.

The Institute of Boiler and Radiator Manufacturers will license any boiler manufacturer, whether a member of the Institute or not, to use I-B-R ratings in connection with any boiler on which the manufacturer has submitted adequate evidence that it will produce the indicated output when measured by the terms of the I-B-R codes. Boilers so rated will be marked with the I-B-R emblem, which is a registered mark of the Institute.

New Book Shows History and Present Status On Standards for Consumer Information

A Review

by

Max Gertz

Chairman, ASA Advisory Committee on Ultimate Consumer Goods

Product Standards and Labeling for Consumers, by Alice L. Edwards. Published by Ronald Press, 15 E. 26 Street, New York. 134 pages. Price, $2.50.

IN her calm, unemotional analysis of the efficacy of various agencies engaged in furthering standards for consumer goods, Miss Edwards herself makes a valuable contribution to the advance of the program for adequate consumer standards and labels. Of the several excellent summaries of the consumer movement and the status of standards and labels which have recently been published, this is especially valuable because it brings to the subject the seasoned judgment of an understanding consumer. First as secretary of the American Home Economics Association, and later as an interested consumer, Miss Edwards has participated in the recent consumer movement and its by-product of standards and labels from their very inception. Her point of view is representative of that of intelligent, farsighted consumers everywhere:

"Consumers are not ambitious to lead in the program if industry will demonstrate its willingness. . . . Leaders among consumers are, in the main, only asking that they be given an opportunity to participate on an equal footing with representatives of producers, manufacturers, and retailers."

Because Miss Edwards speaks for the consumer as well as with intimate knowledge accumulated during more than ten years of day-by-day standards experience, she has a message doubly valuable to every interested producer, distributor, and consumer.

Factual and scientific in her approach, Miss Edwards begins by developing the causes underlying the present-day need for consumer standards. Her sound conclusion is that these causes lie fundamentally in the multiplicity of consumer goods heaped around us by mass production. Some regulation of this confusion of blessings came in governmental food regulations passed during the early 1900's. But most of it was to await the post-war period of standardization.

First came Dr. Wiley's Food and Drug Act of 1906, then after an interval there followed in 1914 and 1916 voluntary and mandatory standards for many agricultural products. Since these early beginnings were carried out under the auspices of the Department of Agriculture, it is only natural that as time has passed the Department has taken an increasingly large part in the further development of such food and agricultural standards. Miss Edwards carefully summarizes the work carried on by the Agricultural Marketing Service, the Bureau of Home Economics, and the Food and Drug Administration, all of the Department of Agriculture.

Standardization Follows War

Immediately after the World War came simplification and standardization, again under government supervision, and now centered in the National Bureau of Standards of the Department of Commerce.

In 1914, a third federal standards agency, the Federal Trade Commission, was established "to protect honest business against the unlawful and unfair practices of its competitors." But this commission was to remain quiescent till the NRA had passed. Since then, however, it has played an increasingly important and often controversial part in the establishment of both permissive and mandatory standards for consumer goods as well as standards for distributor practices.

Meanwhile, industrial leaders had developed for industry a standards procedure on a strictly

independent voluntary basis without government compulsion. In 1918 they organized the American Standards Association, now a federation of 75 national trade associations, technical societies, and half a dozen government departments.

To carry on its work in the producer field, the ASA has developed a technique which can be of inestimable value to the consumer field. In its Advisory Committee on Ultimate Consumer Goods it has since 1936 endeavored to use that technique and the vast fund of its experience in the use of the conference method of developing standards for consumer goods. Largely as a result of confidence inspired in each other at meetings of the ASA Advisory Committee on Ultimate Consumer Goods, consumer and retailer representatives have banded together in a National Consumer-Retailer Council.

Now, asks Miss Edwards, "what agency shall be selected as the one under which to promote the development of standards, grades, or labeling of products in a given field? Is there one *best* agency to guide such a program? How do different agencies influence the results to be obtained?" Having put the question she answers it herself.

"Experience seems to indicate that, to date, the program is being advanced, at times, by following the simple device, when results are blocked in one channel, of choosing a new agency and starting all over again. . . . All of which casts some doubt on the wisdom of placing all standardization eggs in the same basket."

This, to the writer, is a strange conclusion for Miss Edwards to draw from her factual, scientific study. Her verdict is contrary to her own evidence which seems to point strongly to the need of one central body to correlate the work of all these diverse, independent agancies.

Those of us who have been actively engaged in consumer standards work must agree with Miss Edwards that

1. Democratic conferences with fair representation for producer, distributor, and consumer must eventually arrive at sound solutions of consumer problems.

2. Time, patience, and persistence are necessary to ripen judgment and win agreement.

3. "Where standards are developed by cooperative efforts . . . authority and control arise out of the needs and desires of those to be governed. It is only as they, themselves, set the standards and fix the conditions of their use, that regulations are established . . . authority will remain in their own hands."

"Without doubt," Miss Edwards concludes, "it is socially and economically important that all organizations in a position to further the development of sound and serviceable standards for retail commodities and merchandising practices should gain an understanding of how they may participate effectively in these programs and of the part they may each contribute to them. This applies not alone to various groups of consumers and technical agencies. It should extend to both large and small producers and manufacturers of all kinds of products.

"Possibly, by study and comparison of the procedures and agencies as presented in preceding chapters, a large number of these organizations may be encouraged to assume a more active part in the standards program."

IT is socially and economically important that all organizations (both producer and consumer) which are concerned with the development of standards for retail commodities and merchandising practices understand how they can take part effectively in the work and what they can contribute to it. Miss Edwards concludes from her study of the consumer movement. She hopes that the analysis she has provided in this book will give such organizations a better understanding of existing procedures and agencies and will encourage them to take a more active part in the standards program.

A general pattern is now emerging in this work, she says. Factors tending to promote better standards, as well as better acceptance and use of standards, are being recognized by leaders among all groups, including manufacturers, retailers, and consumers. She outlines these factors as:

Fair representation of all interested groups.
Full and objective consideration given to all pertinent data and situations.
Checks established to safeguard the integrity and soundness of standards before adoption.
Willingness to begin on simpler or less controversial items in a standard.
Provision for an adequate educational program.
Provisions for revision of a standard when so desired.

Miss Edwards is an alternate representative of the American Home Economics Association on the ASA Advisory Committee on Ultimate Consumer Goods. She has been active in the national standardization program for some 11 years, having been named as alternate representative on the ASA Standards Council by the American Home Economics Association in 1929. She is AHEA representative on ASA technical committees working on standards for bedding and upholstery, sizes of children's garments, and valid certification, and has also worked on standards for refrigerators and gas-burning appliances.

Consumer Standards Project Analyzes Food, Drug Act

An analysis of the provisions of the Federal Food, Drug, and Cosmetic Act has been prepared by the Consumers Standards Project, AAA, and is being published in the form of a chart which will compare the provisions of the Act as they apply to (1) Food, (2) Drugs and Devices, and (3) Cosmetics. The chart analyzes the requirements of the Act under the following main headings:

- Definitions
- What constitutes adulteration
- What constitutes misbranding
- Prohibited acts
- Establishment of standards and other administrative regulations
  - Standards
  - Other administrative regulations
  - General authority and procedure
- New drugs
- Tolerances
- Exemptions
- Imports and exports
- Enforcement
  - Seizures
  - Examination, investigation, inspection
  - Different treatment for minor violations
- Judicial review of certain regulations
- Miscellaneous
- Relations to other laws

Copies of the chart, which will measure 20 x 44 inches, will be available without charge, in a limited supply, from the Consumer Standards Project, Consumers Counsel, Agricultural Adjustment Administration, Washington, D. C.

NFPA Annual Meeting May 6 To Hear Standards Report

The proposed 1940 edition of the National Electrical Code, as well as reports of committees sponsored by the NFPA and working on other standards under the procedure of the American Standards Association, will be presented to the National Fire Protection Association at its Annual Meeting at Atlantic City the week of May 6. It is expected that reports will be received from committees on automatic sprinklers, dust explosion hazards, farm fire protection, flammable liquids and gases, air conditioning, blower systems, signaling systems and thermostats.

The first general session of the NFPA annual meeting will be Wednesday evening, May 8, preceded by a two-day session of the Fire Marshals Section, a meeting of the Marine Section, a conference on Transportation Fire Hazards, and other preliminary meetings. The general sessions will continue from Wednesday through Saturday, May 11.

Recommended Commercial Standard for Pipe Nipples

Recommended Commercial Standard for Pipe Nipples: Brass, Steel, and Wrought Iron (TS. 2784) has been circulated by the National Bureau of Standards to producers, distributors, and users for acceptance. This proposed standard is a revision and consolidation of CS5-29, CS6-31, and CS10-29, and was submitted by the National Association of Pipe Nipple Manufacturers.

The recommended standard covers steel and wrought-iron pipe nipples, black and zinc coated, in iron-pipe sizes from $\frac{1}{8}$ to 12 inches inclusive, of standard lengths; and brass nipples in iron-pipe sizes from $\frac{1}{8}$ to 6 inches inclusive, of standard lengths. Steel and wrought-iron pipe nipples are to be furnished in the following types: Type A, Standard Weight; Type B, Extra Strong; and Type C, Double Extra Strong. According to the proposed standard, pipe nipples are to be threaded on both ends with standard taper pipe threads conforming to the American Standard for Pipe Threads, B2-1919 (Federal Specification GGG-P-351).

Mimeographed copies of the recommended standard are available from the National Bureau of Standards, Washington, D. C.

NEMA Issues Two New Standards On Laminated Phenolic Products

The National Electrical Manufacturers Association has just published two new standards on Laminated Phenolic Products as follows:

NEMA Laminated Phenolic Products Standards, Publication No. 39-57.

NEMA Recommended Practice for Machining and Punching Laminated Phenolic Plate, Publication No. 39-58.

The new Laminated Phenolic Products Publication is a revision of that issued in 1934. It contains a general description of laminated phenolic manufacture, description of twelve grades of laminated phenolic plate, and nine grades of tubing, standard sizes and finishes of plates, rods and tubing, standard colors of plates, standard tolerances; and physical and electrical properties of the various grades.

The publication on Recommended Practice for Machining and Punching Laminated Phenolic Plate is new and includes information on sawing, drilling, tapping, threading, milling, turning, punching, shaving, and shearing of the various grades of laminated phenolic plate.

These standards may be obtained from NEMA, 155 East 44 Street, New York, at 25 cents and 10 cents, respectively, per copy.

New Foreign Standards Available from ASA Library

Copies of new and revised standards have recently been received from the following countries:

Australia

Road traffic control (electric) light signals (E.32-1939). *This is endorsement of British Standard Specification No. 505-1937 with Amendments added.*
Aluminum stearate (K.70-1939)
Extra-low voltage transformers, Approval and test specification for (C.126-1939)
Turpentine and mineral turpentine (K.7 and 8-1939)
Wiring rules, Part I., Wiring methods (CC.1-1940)
Bright hexagon bolts and nuts of American Standard thread form (Emergency Standard E(B).1-1939)

Canada

Construction and test of domestic electric clothes-washing machines (C22.2, No. 53-1939)
Construction and test of switchboards (C22.2, No. 31-1939)
Construction and test of fuses (both plug and cartridge-enclosed types) (C22.2, No. 59-1939)
Construction and Test of Electric Signs (C22.2, No. 2-1939)

Great Britain

Air-break switches (including isolation switches, totally-enclosed and flameproof types) for voltages not exceeding 660 volts (861-1939) *Supersedes 109-1934, 124-1934 and 126-1930*
Air-break circuit-breakers (including totally-enclosed and flameproof types) for voltages not exceeding 660 volts (862-1939) *Supersedes 110-1934, 127-1930 and 130-1934*
Code for comparative commercial tests of coal or coke and appliances in small steam raising plants (878-1939)
Steel tubes for water well casing (879-1939)
Concert pitch (880-1939)
Nomenclature of hardwoods (including botanical species and sources of supply). (881-1939)
Terms used in radio direction-finding (CF(EL) 4420) *Issued as a supplement to 205-1936*

Revised British Standards

Voltages for transmission and distribution A-C systems (77-1939) *Supersedes 77-1932*
Round strand steel wire ropes for lifts and hoists (329-1939) *Supersedes 329-1928*
Rules for the measurement of voltage with sphere-gaps (358-1939) *Supersedes 358-1929*
Testing of the zinc coating on galvanized wires (443-1939) *Supersedes 443-1932*

British Air Raid Precautions Standards

Galvanised wire netting and cloth for protection against flying glass (BS/ARP 8)
Reduced scheme for the lighting of shelters, where A-C mains are available (BS/ARP 26)
Gauges for checking low values of illumination (0.002 to 0.2 foot-candle) (BS/ARP 30)
Obscuration value for textile material for curtains and method of testing (BS/ARP 23)
Illuminated and non-illuminated A.R.P. signs (BS/ARP 32)

Great Britain (Cont.)

Illuminated display cabinets (BS/ARP 35)

Revised British Air Raid Precautions Standards

Fitted cistern suitable for the decontamination of anti-gas oilskin clothing (First revision of BS/ARP 4)
Heavy aggregates for shelters constructed in Situ (First revision of BS/ARP 1)
Street lighting under war-time conditions (First revision of BS/ARP 37)

Sweden

Round flanges, threaded. Nominal pressure: 40 (SMS-492); Nominal pressure: 64 (SMS-493); Nominal pressure: 100 (SMS-494)

Revised

Pipes and flanges. Survey (SMS-325B)
Steel tubes, gas welded. Nominal pressure: 6 (SMS-332B)
Pipes and flanges. Pressure limits (SMS-333B)
Flange types. Survey (SMS-334B)
Packing grooves (SMS-336A)
Flanges with tongue and groove. Nominal pressure: 10-100 (SMS-337A)
Male and female flanges for flat packing. Nominal pressure: 10-100 (SMS-338B)
Male and female flanges for round packing. Nominal pressure: 10-100 (SMS-339A)
Flanges and pipes of cast iron. Nominal pressure: 6 (SMS-340B); Nominal pressure: 2, 5 (SMS-341A); Nominal pressure: 10 (SMS-342B)
Flanges and pipes of cast steel. Nominal pressure: 16 (SMS-343B); Nominal pressure: 25 (SMS-344B); Nominal pressure: 40 (SMS-345B)
Oval flanges, threaded. Nominal pressure: 6 (SMS-346B)
Round flanges, threaded. Nominal pressure: 6 (SMS-347B); Nominal pressure: 16 (SMS-348B)
Flange bore grooves for tube connection (SMS-349A)
Flanges for rolled in tubes. Nominal pressure: 6 (SMS-350B); Nominal pressure: 10 (SMS-351B); Nominal pressure: 16 (SMS-352B); Nominal pressure: 25 (SMS-353B); Nominal pressure: 40 (SMS-354B)
Flanges, welded on tubes. Nominal pressure: 6 (SMS-356B); Nominal pressure: 10 (SMS-357B)
Loose flanges for flanged tubes. Nominal pressure: 6 (SMS-358B)
Flat packings for flanges with flat surface (SMS-359B); with tongue and groove (SMS-360A)
Flat packings for male and female flanges (SMS-361B)
Round packings for male and female flanges (SMS-362A)

New Zealand

Pollard (274)
Water closet flushing cisterns (245)
Portable fire extinguishers of the soda acid type (246)

The above standards are published in the language of the country from which they were received, and are available to ASA members for either purchase or loan. In ordering please mention the number of the standard as well as the title.

Building Codes—

For Higher or Lower Construction Costs?

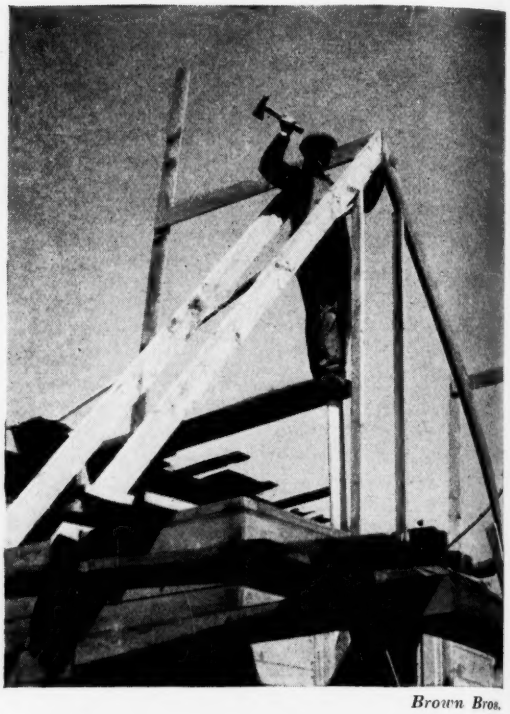
BUILDING codes, dealing as they do with building materials and processes, are a factor in building-construction costs. When these codes increase costs, they have a far-reaching effect on mortgage lending. Low building costs are definite stimuli to home ownership and tend to increase the outlet for investment funds.

Where local building-code requirements unnecessarily increase construction costs, potential home owners are discouraged from building. The larger initial charges and monthly mortgage payments which are necessitated because of the higher building costs also act as deterrents. Under these same conditions, modernization of properties may also become uneconomical.

As building costs decrease, construction of moderate-cost homes tends to increase. Since a preponderant portion of families of the United States have annual incomes of $2,000 and less, these families constitute a major building market which offers important possibilities for investment capital. This market demands both owner-occupied and rental properties. To meet the housing needs of families in this group, building costs and rental levels must be consistent with their incomes. Excessive code requirements which impose added building costs obviously must tend to retard construction activity in this field.

Since it is apparent that construction volume in a locality may be greatly influenced by building-code requirements, lending-agency executives who are desirous of gaining new outlets for investment capital should have more than a superficial interest in their local codes.

There are more than 1,500 such codes, all developed by as many independent code authorities. These authorities are often hampered by lack of proper personnel, research and testing facilities, and the means of keeping abreast of rapidly changing conditions and scientific developments. As a result, it is not surprising that many of these codes contain provisions, and unnecessarily severe restrictions, which tend to increase the cost of construction and to retard building activity.



Brown Bros.

Subcommittees of the ASA Building Code Correlating Committee are preparing standards as the basis for uniform building code requirements. Wood construction is one of the subjects being studied by a technical subcommittee

Among other deficiencies of building codes is their frequent lack of uniformity in fundamental matters of fact. These individual peculiarities may have the effect of requiring changes in manufacturing processes which destroy the possible benefit of lowered cost through mass-production economies. Higher standards than are necessary to public health and safety result in waste and increased costs without proportional increase in value. Failure to distinguish between essential requirements of large and small structures often imposes a cost penalty on small buildings.

Use of New Methods Restricted

Many codes fail to make flexible provision for ready acceptance of new materials and methods. When this occurs, the public is denied the benefits of possible cost savings or improved construction, the science of building is retarded, invention is discouraged, and intelligent solution of a problem may be prevented. In some instances, require-

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This article, prepared by the Federal Housing Administration, is reprinted from the FHA *Insured Mortgage Portfolio*.

ments based upon emotion rather than sound engineering add a cost burden out of all proportion to any possible loss that might result from their lack.

Some 20 per cent of the building codes in existence are from 15 to 20 years old. Many of these contain obsolete standards and mandatory features that today should be optional rather than required. Factors of safety have not been adjusted to improved manufacturing processes which now produce materials of more uniform quality and dependability.

A typically glaring inconsistency in building codes is seen in the variation of required working stress of structural steel. Under the various codes, this stress ranges from 16,000 pounds per square inch to a recommended value of 20,000 pounds. The manufacture of structural steel has been developed to produce a generally uniform product, however; hence, if a working stress of 18,000 pounds per square inch is safe in Richmond, Va., it is logical to believe that it would be equally safe in Oakland, Calif. Or if a working stress of 18,000 lbs per sq in. is required for safety in Los Angeles County, why should the city of Los Angeles permit only 16,000 lbs for the same product?

Another inconsistency is found in fire-protection requirements. In many codes these are based upon the thickness of materials rather than the length of time fire must be resisted. In the code of at least one city there is an arbitrary requirement of eight inches of masonry around steel columns. Out of a number of codes examined, one requires five inches of concrete as fireproofing for a four-hour rating; seven require three inches; five, two inches; and four require a thickness of only one and one-half inches. At least some of their requirements rest on no factual basis, since there cannot be a difference of three and one-half inches in the thickness of concrete actually required to resist a four-hour fire.

While the working stress of structural steel and fireproofing requirements are not important factors in the cost of small houses, they may be direct factors in the cost of multifamily houses. They also are indirectly reflected in higher property taxes brought about by the increased cost of public buildings.

Live-Load Requirements Differ

To cite still another point of variation, the codes of 80 representative cities show a marked discrepancy in live-load requirements for dwellings. Sixty codes require structural floor members to be designed on a basis of 40 pounds per square foot; 11 require 50 pounds. Nine codes have a variation from 60 to 100 pounds per square foot. It seems highly improbable that people and household furniture in Greenville, S. C., weigh 60 pounds per square foot of floor area more than

THIS timely discussion of the effect building codes may have in either raising or lowering construction costs emphasizes the increasing need for the standard building code requirements now being prepared by committees of the American Standards Association.

These ASA committees are basing their work on technical data some of which are now being compiled for the first time. For instance, marked variations in building code requirements for stresses in structural steel and differences in the live-load requirements for dwellings are mentioned in this article. ASA committees are compiling information on both of these subjects, as well as on many others, as the basis for recommending uniform building code requirements that will be technically authoritative as well as economically acceptable without unnecessarily increasing costs.

Under the supervision of the ASA Building Code Correlating Committee technical committees have been organized and are now developing standard building code requirements for:

Chimneys and Heating Appliances
Excavations and Foundations
Fire Extinguishing Equipment
Fire Protection and Fire Resistance
Iron and Steel
Light and Ventilation
Minimum Design Loads in Buildings
Reinforced Gypsum Concrete
Signs and Billboards
Wood
Administrative Requirements

In addition, means of egress are covered at present by the Building Exits Code, for which the National Fire Protection Association is sponsor. The latest revision of this code has just been approved as A9-1940. Electrical requirements in buildings are covered by the National Electrical Code, for which the National Fire Protection Association also is sponsor. The latest edition of this Code was approved by the American Standards Association in 1937, but a new edition is now under way. Minimum requirements for plumbing are being developed by a subcommittee of the ASA Committee on Plumbing, for which the American Society of Mechanical Engineers and the American Society of Sanitary Engineering are joint sponsors.

in Buffalo, N. Y., or Seattle, Wash. Variation in these code requirements indicate a lack of fundamental knowledge of actual floor loads likely to occur in houses. If 40 pounds is an adequate live load in 60 cities, then the citizens of the other 20 cities are paying an unnecessary penalty in the cost of floor and foundation construction beyond that safely required.

Again, out of a total of 74 codes, 52 require basement walls of two-story masonry buildings to be 12 inches thick and the upper stores eight inches; four require 16-inch basement walls and eight-inch upper walls; one requires 16 inches for the basement and 12 inches above; and 17 permit eight-inch masonry walls for basement and first and second stories. In those cities where the wall thicknesses exceed those demanded by safety, the public is paying more than it should for its houses.

At least four cities in the East prohibit balloon-frame construction. This restriction is difficult to understand, since this system of erecting wood-framed structures has been successfully used for many years in other parts of the country.

Ceiling Minimums Also Vary

Where building codes stipulate minimum room sizes, requirements are known to vary from 60 to 120 square feet. Ceiling-height minimums range from seven to nine feet. Twenty-four out of 88 codes examined place the minimum at eight feet. Eight feet would appear to be a reasonable requirement and it is questionable whether a valid reason exists for increasing the cost of dwellings by making a greater ceiling height mandatory.

Plumbing and other special codes reflect variations and discrepancies which could be reconciled for public benefit. House traps, for instance, are required by the widely used plumbing code of the National Association of Master Plumbers. They are not included in the recommended minimum requirements for plumbing of the Department of Commerce Building Code Committee nor in the standard plumbing code of the Pacific Coast Plumbing Inspectors Association, however. While house traps are minor items in point of cost, the varying provisions concerning them are indicative of the marked lack of agreement among building codes throughout the country, particularly on facts upon which agreement should be possible.

The need for some variations in codes to meet local conditions is, of course, recognized. Sections of the country which experience high winds or heavy snowfalls, or which are subject to earthquakes or other peculiar physical and climatic phenomena, obviously must impose special structural requirements. Variations in such requirements result from variations in physical conditions, rather than from lack of agreement concerning construction practice or from ignorance.

It is apparent from the lack of uniformity of building codes that there is urgent need for subjecting their provisions to critical analysis and revision. Codes could and should show fewer divergencies in their requirements. Greater economy in construction costs could be effected through a complete correlation of codes, without impairing their primary purpose of protecting public safety and health.

Unless decisive effort is made in this direction, it is reasonable to suppose that the present lack of uniformity will continue indefinitely. The confusion will be increased as new codes are added to the 1,500 now in force by many of the communities of more than 2,500 population which at present have none.

Active Interest Justified

It is hardly necessary to point out that lending institutions might well take an active local and national interest in the solution of this problem. A keener realization by mortgage lenders of the relationship between building codes and lending activities is important. State and municipal building-code authorities could be influenced to review their existing codes and revise them in accordance with model building codes and modern construction practices.

Active participation in a program of this nature by national organizations of lending institutions would be a powerful influence toward obtaining greater uniformity in building codes and eliminating excessive requirements having a tendency to raise building costs. An increase in construction volume and greater opportunities for investment of private funds are among the benefits which should result from such action.

Recommended Revision of Commercial Standard for Fuel Oils Accepted

Last September a Recommended Revision of Fuel Oils, Commercial Standard CS12-38, was circulated by the National Bureau of Standards to producers, distributors and users of fuel oils for their consideration and approval. Since then satisfactory response has been received and the Bureau has now announced that the Commercial Standard, now identified as CS12-40, has become effective for new production. The Standard is identical in substance with Tentative Specifications for Fuel Oils, D 396-39T of the American Society for Testing Materials.

ASA Consumer Standards Committees Show Activity in ACUCG Reports

THE Advisory Committee on Ultimate Consumer Goods of the American Standards Association met February 27 and re-elected Max Gertz, merchandise manager of B. Gertz, Inc., as chairman and Ruth O'Brien, chief of the Clothing and Textiles Division of the U. S. Bureau of Home Economics, as vice-chairman.

Reports made to the Advisory Committee showed the following activity on the consumer standards work going forward under its supervision:

Household Refrigerators—The ASA Committee on Standards for Household Refrigerators (B38) has been reorganized with Dr. E. C. McCracken, professor of physics and household engineering, Teachers College, Columbia University, as chairman, and W. M. Timmerman, Appliance Division, General Electric Company, Bridgeport, Connecticut, as vice-chairman. Plans have been made by the American Society of Refrigerating Engineers and the Bureau of Home Economics of the U. S. Department of Agriculture to start active work on this project.

Bedding and Upholstery—Seven of the nine subcommittees working on standards for bedding and upholstery are now developing draft standards. Reports have been completed on cotton and wool, and will be completed soon on innersprings, feathers and downs, sterilization, and methods of test. They will all then be submitted to the ASA Committee on Standards for Bedding and Upholstery (L12).

Sheets—The ACUCG voted to appoint a subcommittee of two consumer representatives and two retailer representatives to consider how the work of the ASA Committee on Sheets could be started actively again, and whether it should recommend the appointment of some organization to act as sponsor for this autonomous committee.

Shoes—Studies on the possibilities of standards for certain types or features of shoes now being made by this subcommittee are almost complete and will be submitted to the ACUCG soon. A report on shoe shanks received from a manufacturer group was referred by the ACUCG to this subcommittee for study.

Silver-plated Tableware—This subcommittee is studying Federal Specifications and standards developed by the silverware manufacturing industry as a basis for its work.

Sun Glasses—The Commercial Standards for Ground-and-Polished Lenses for Sun Glasses (CS 78-39) and for Blown, Drawn, and Dropped Lenses for Sun Glasses (CS 79-39) have been submitted by the Sun Glass Institute to the American Standards Association for approval. Additional consumer and retailer groups have been canvassed by the ASA, supplementing the canvass made by the National Bureau of Standards. No opposition to approval of the standards was found. A subcommittee is expected to make recommendations to the ACUCG soon on approval of these standards.

Standards for Reconditioning—Conferences between the ASA staff and the National Association of Dyers and Cleaners have indicated that little can be done on standards for drycleaning until a satisfactory test to determine what constitutes drycleaning is developed. The National Association of Dyers and Cleaners is now working on a test, the Association reports.

Methods of Testing Tubular Sleeving and Braids—ASTM standard D 354-36, submitted by

Re-elected

Max Gertz

Chairman, ASA Advisory Committee on Ultimate Consumer Goods

the American Society for Testing Materials to the American Standards Association for approval, was referred to a subcommittee by the Advisory Committee on Ultimate Consumer Goods. This ASTM standard had been recommended for approval by ASA Committee on Electrical Insulating Materials (C59) but the ACUCG found that the electrical uses for this material cover only a minor portion of the material to be tested under the standard and that the other uses for this material bring it into the consumer field.

ACUCG Subcommittee to Study Test Methods for Consumer Goods

In addition to hearing reports on the technical work under way, the Advisory Committee for Ultimate Consumer Goods voted to appoint a subcommittee to prepare lists of test methods for consumer goods to be used by the committee as the basis for a general survey of available methods for testing consumer goods. Such a survey would give information needed in developing sound performance standards for consumer goods, it was explained. These test methods fall into three groups, the committee found, as follows:

1. Recognized standard tests developed by the American Society for Testing Materials; American Association of Textile Chemists and Colorists; the National Bureau of Standards; and other governmental laboratories, etc., some of which have been approved by the American Standards Association.

2. Test methods developed in individual laboratories (in stores, educational institutions, commercial testing laboratories, etc.) which use different techniques and sometimes lead to different results or different interpretations of data obtained.

3. Factors relating to consumer goods for which no test methods, or inadequate methods, are available.

Eleven Commercial Standards, many of which are of direct interest to consumers, have been promulgated by the National Bureau of Standards since the last meeting of the ACUCG, it was reported:

Boys' button-on waists, shirts, junior and polo shirts
Automatic mechanical draft oil burners designed for domestic installations
Book cloths, buckrams, and impregnated fabrics
Fuel oils (fifth edition)
Hosiery lengths and sizes (revision)
Hardwood interior trim and molding
Interchangeable ground-glass joints, stopcocks and stoppers (fourth edition)
Old Growth Douglas Fir standard stock doors
Sanitary cast-iron enameled ware
Solid hardwood wall paneling
Tents, tarpaulins and covers

It was recommended that the Subcommittee on Commercial Standards review these standards with the idea of recommending to the ACUCG those Commercial Standards of special interest to consumers.

Recommendation for Paper Cones And Tubes for Textile Winding Now Available

Printed copies of Simplified Practice Recommendation R143-39, Paper Cones and Tubes (for Textile Winding), are now available, according to an announcement of the Division of Simplified Practice, National Bureau of Standards. This is a revision of a recommendation which originally became effective in 1933. It covers stock sizes of paper cones and tubes for winding warp and knitting yarns of cotton, rayon, silk, and worsted, asbestos roving, tire cords, thread, wire insulating yarns, etc.

The present revision affects only paper cones, providing for the elimination of two cones no longer in demand, and adding three cones which have come into general use for winding silk and rayon. These changes provide a 6- and a 6-¾-inch 3 degrees 30 minutes cone for each of the following types of rayon knitting yarns: viscose, viscose and acetate, and acetate.

Copies of this recommendation are available from the Superintendent of Documents, Government Printing Office, Washington, D. C., at five cents each.

ASA Meetings

Meetings of the American Standards Association have now been scheduled as follows:

Board of Directors	*Standards Council*
Wednesday, April 17	Thursday, April 18
" June 19	" June 20
" September 25	" September 26
" December 11	Wednesday, December 11

The December 11 meeting will be the Joint Annual Meeting of the Board of Directors and the Standards Council.

New Approved and Revised Federal Specifications Now Available

The following Federal Specifications have been approved by the Director of Procurement for all Government purchasing of the material covered. The date on which the specification becomes effective is indicated opposite its title in the list.

Acetone. Amendment-2 O-A-51a March 15, 1940

Aluminum-Alloy (A1-53) (Aluminum-Magnesium-Silicon-Chromium); Bars; Rods, Shapes, and Wire. (superseding QQ-A-331) QQ-A-331a April 1, 1940

Atomizers; Hand. Amendment-2 GG-A-761 March 15, 1940

Boxes; Chipboard, Laundry. (superseding UU-B-651) UU-B-651a March 1, 1940

Buckets; Metal, Tinned. RR-B-784 Feb. 15, 1940

Celery; Fresh. (superseding HHH-C-191) HHH-C-191a March 15, 1940

Cereal, Wheat; Uncooked. (superseding part of N-C-191a) N-W-261* March 15, 1940

Cereals, Breakfast; Prepared (Ready-to-Eat). (superseding part of N-C-191a) N-C-196* March 15, 1940

***N-C-191a entirely superseded and canceled**

Clocks; Pendulum (for) General Purposes. Amendment-1 GG-C-451 March 15, 1940

Erasers; Rubber and Rubber-Substitute. Amendment-2 ZZ-E-661a March 15, 1940

Furniture and Cabinets; Office, Sectional, Steel. Amendment-1 F-791b March 15, 1940

Glasses, Gage; Flat (Plain and Reflex), (for Pressures 125 Pounds and Over). DD-G-291 March 15, 1940

Iron, Gray; Castings. (superseding QQ-I-651, & QQ-I-656) QQ-I-652 March 1, 1940

Linoleum; Battleship. (superseding LLL-L-351) LLL-L-351a March 15, 1940

Mats, Door; Fiber. (superseding DDD-M-156) DDD-M-156a March 1, 1940

Mortar; Air-Setting, Refractory, Bonding, (Wet-Type). HH-M-611 March 1, 1940

Packing; Flax. Amendment-4 HH-P-106 March 15, 1940

Pencils; Wood-Cased, Colored-Lead, (General-Use). SS-P-201 March 15, 1940

Pins; Office. (superseding FF-P-401) FF-P-401a March 15, 1940

Pipe-Fittings; Cast-Iron (Threaded). (superseding WW-P-501) WW-P-501a April 15, 1940

Pipe-Fittings; Malleable-Iron (Threaded), 150 Pounds. (superseding WW-P-521) WW-P-521a April 1, 1940

Soda Ash. (superseding O-S-571) O-S-571a March 1, 1940

Tubing, Aluminum-Alloy (A1-3) (Aluminum-Manganese); Round, Seamless. (superseding WW-T-788) WW-T-788a March 1, 1940

The specifications and amendments may be purchased from the Superintendent of Documents, Government Printing Office, Washington, D. C., at five cents each.

Railroads Make Use Of American Standards

The Electrical Section of the Engineering Division, Association of American Railroads, makes extensive use of electrical standards approved by the American Standards Association, the report of the Section's Committee on Standardization of Apparatus and Materials shows. The report, published in Bulletin 412 of the American Railway Engineering Association, points out that the railroads' specifications for rubber-insulated wire and cable have been revised in line with American Standards C8.14-1938 (Specifications for Bare Concentric Stranded Copper Cable for Insulated Conductors; Hard, Medium Hard or Soft) and C8.19-1939 (Specifications for Weather-Resistant Saturants and Finishes for Aerial Rubber-Insulated Wire and Cable). Other American Standards in the wire and cable series are referred to in the railroads' specifications.

The Standardization Committee urges all members of the Electrical Section to make use of the American Standards Association's price list of approved American Standards.

Lemke Bill Would Prohibit Quality Seals on Foods, Drugs

A bill to prohibit the use of seals of quality for food, drugs, and cosmetics unless approved by the Federal Trade Commission was introduced in the House of Representatives by Representative William Lemke, of North Dakota, February 27.

The bill reads:

"The use, sale, purchase, or exchange of any seal, stamp, or certificate of another person, association, organization, or company denoting or implying equality or superiority in purity, quality, usefulness, or effectiveness of any drug, food, cosmetic, therapeutic lotion, therapeutic device, or diagnostic or surgical assists in comparison or competition with other products of like kind, or similar nature, unless such seal, stamp, or certificate has been approved by the Federal Trade Commission, shall be deemed to be unfair or deceptive acts or practices in commerce."

Underwriters' Laboratories Issues Standards for Signs

Underwriters' Laboratories, Inc. has issued a Standard for Electrode Receptacles for Gas-Tube Signs. This is the first edition and becomes effective immediately.

A revised edition of the Standard for Electric Signs has also been issued by the Laboratories.

Color Marking for Anesthetic Gas Cylinders Recommended

A system for marking the shoulders of anesthetic gas cylinders with colored stripes to identify the gas has been recommended by the American Society of Anesthetists, with the approval of the Committee on Simplification and Standardization of Hospital Furnishings, Supplies, and Equipment of the American Hospital Association. The recommendation has been circulated as a proposed simplified practice recommendation by the Division of Simplified Practice of the National Bureau of Standards.

Identification by color or a combination of colors is provided in the proposed recommendation for seven different gases and two mixtures of gases. Where two colors are used they are to be applied in bold stripes of equal width. To the bodies of chromium-plated cylinders no color need be applied, but the bodies of other cylinders shall be finished in aluminum. The recommendation also provides that labels clearly identifying the contents and predominantly of a color corresponding with the shoulder-marking be attached to each container. In the case of inflammable gases the label is to display cross bars in red, and if possible, the word "Inflammable."

The proposal is based on studies by the American Society of Anesthetists of the possible hazards in connection with the use of a growing variety of anesthetic gases, and it is believed that the recommendation will reduce the hazards by insuring in every possible way against accidental confusion as to the kinds of gases being handled at any given time.

Copies of the proposed recommendation may be obtained from the Division of Simplified Practice, National Bureau of Standards, Washington, D. C.

Proposed Italian Standards Recently Received by ASA

The Library of the American Standards Association has on hand for loan or purchase two recent draft standards published in Italian by Uni Ente Nazionale Per L'Unificazione Nell'Industria, the national standardizing body of Italy. The proposed standards are as follows:

Specifications for brass and bronze ingots for casting specifications for brass and bronze casting (UNI 0293)

Carbon steel forgings (UNI 0285)

Members of the American Standards Association wishing to either borrow or purchase copies of the drafts may do so from the ASA Library.

Australian and British Draft Standards Available

The American Standards Association has recently received copies of the following drafts of proposed standards:

Australia

Dimensions of Switchboard Panels (Comments before July 15, 1940)

Joiners' Glue—Cake or Powder, Jelly or Liquid, and Casein Glue (Comments before June 15, 1940)

Natural Sour (Prime Lactic) Casein for Glue Manufacture (Comments before June 15, 1940)

Safety Glass for Land Transport (Comments before May 31, 1940)

Great Britain

Carbon Steel Fusion Welded Boiler Drums CF (ME) 4799 (Comments before April 15, 1940)

Small Fusion Welded Steel Air Receivers (less than 9 in. internal diameter) CF (ME) 4809 (Comments before July 18, 1940)

Test Code for Gas Producers CF (GS) 4920 (Comments before May 8, 1940)

Copies of these drafts may be borrowed from the Library of the American Standards Association, and the Library will be glad to forward any comments on these drafts to the national standardization bodies concerned. The date following each title is the closing date for receipt of comments at the British or Australian office.

Eliminate Sizes for Cast Iron Radiators

A new Simplified Practice Recommendation, R174-40, establishes a recommended list of 17 sizes for Large Tube Cast Iron Radiators. Formerly 33 sizes were manufactured. The new list has been accorded the required degree of acceptance by the industry and was approved for promulgation March 1, according to an announcement of the Division of Simplified Practice, National Bureau of Standards.

The recommendation, in the opinion of the Institute of Boiler and Radiator Manufacturers, which is sponsoring the reduction of sizes, should lower the cost of production by eliminating many varieties that have had slow turn over, and will greatly facilitate the maintenance of adequate inventories of the recommended sizes. It should also simplify the work of engineers, architects, and contractors in specifying, procuring, and installing radiation, and simplify the problems of the distributors and jobbers by insuring more prompt deliveries.

Until printed copies are available, mimeographed copies of this Simplified Practice Recommendation may be obtained without charge from the Division of Simplified Practice, National Bureau of Standards, Washington, D. C.

ASA Standards Activities

Standards Approved Since Publication of Our February Issue

Backlash for General Purpose Spur Gearing, American Standard B6.3-1940

Approval Requirements for Domestic Gas Ranges, American Standard (Revision of Z21.1-1937) Z21.1-1940

Approval Requirements for Gas Clothes Dryers, American Standard (Revision of Z21.5-1932) Z21.5-1940

Requirements for Installation of Conversion Burners in House Heating and Water Heating Appliances, American Standard (Revision of Z21.8-1933) Z21.8-1940

Approval Requirements for Hot Plates and Laundry Stoves, American Standard (Revision of Z21.9-1933) Z21.9-1940

Approval Requirements for Gas Space Heaters, American Standard (Revision of Z21.11-1936) Z21.11-1940

Approval Requirements for Central Heating Gas Appliances, American Standard (Revision of Z21.13-1938) Z21.13-1940

Approval Requirements for Gas Unit Heaters, American Standard (Revision of Z21.16-1934) Z21.16-1940

Listing Requirements for Gas Conversion Burners, American Standard (Revision of Z21.17-1934) Z21.17-1940

Listing Requirements for Ignition Failure Shut-Off Devices (formerly Automatic Devices Designed to Prevent Escape of Unburned Gas), American Standard (Revision of Z21.20-1935) Z21.20-1940

Listing Requirements for Water Heater, Gas Range and Space Heater Thermostats, American Standard (Revision of Z21.23-1935) Z21.23-1940

Approved Standards Available Since Publication of Our February Issue

Building Exits Code, American Standard (Revision of A9-1939) A9-1940 75¢

Safety Codes for the Prevention of Dust Explosions (Eleven Standards in One Volume)— 75¢

- Starch Factories Z12.2-1940
- Flour and Feed Mills Z12.3-1940
- Terminal Grain Elevators Z12.4-1940
- Woodworking Plants Z12.5-1940
- Pulverizing Systems for Sugar and Cocoa Z12.6-1940
- Coal Pneumatic Cleaning Plants Z12.7-1940
- Wood-Flour Manufacturing Establishments Z12.8-1940
- Spice-Grinding Plants Z12.9-1940
- Use of Inert Gas for Fire and Explosion Prevention Z12.10-1940
- Manufacture of Aluminum Bronze Powder Z12.11-1940

Specifications for Electric-Fusion-Welded Steel Pipe (Sizes 30 in. and Over), American Standard (Revision of B36.4-1936) B36.4-1939 25¢

Specifications for Cement Mortar Lining for Cast-Iron Pipe and Fittings, American Standard A21.4-1939 15¢

Standards Now Being Considered by Standards Council for ASA Approval

Twist Drills, Straight Shank, Proposed American Standard B5.12

Commercial Standard for Book Cloths, Buckrams, and Impregnated Fabrics for Bookbinding Purposes Except Library Bindings CS 57-36

Proposed American Recommended Practice for the Use of Explosives in Anthracite Mines M27

Commercial Standards for Sun Glass Lenses (CS 78-39; CS 79-39)

Rubber-Insulated Tree Wire (Revision of C8.16-1936) C8.16

Methods of Testing Molded Materials Used for Electrical Insulation (Revision of C59.1-1938; ASTM D 48-39)

Specifications for Soft or Annealed Copper Wire (ASTM B3-39) H4.1

Specifications for Hard-Drawn Copper Wire (Revision of H14-1929; ASTM B1-39) H4.2

Specifications for Medium-Hard-Drawn Copper Wire (ASTM B2-39) H4.3

Tinned Soft or Annealed Copper Wire for Electrical Purposes (ASTM B 33-39) H4.4

Copper Trolley Wire (ASTM B 47-39) H4.6

Hot-Rolled Copper Rods for Electrical Purposes (ASTM B49-39) H4.7

Bronze Trolley Wire (ASTM B 9-39) H22.1

Methods of Testing and Tolerances for Tubular Sleeving and Braids (ASTM D 354-36) L13

Safety Rules for Radio Installations of the National Electrical Safety Code, Part 5

Electric Fences of the National Electrical Safety Code, Part 6

New Project Requested

Safety Shoes

Draft Available

Engineering and Scientific Graphs for Publication, Proposed American Standard Z15.3

Standards for Aggregates Lower Producers' Costs

Lower costs to the producer are the result of simplifying and standardizing specifications for aggregates, says Elwood T. Nettleton, engineering director and secretary of the New York State Crushed Stone Association, in an article "Simplification Aids Modernization," *Rock Products*, June, 1939. Benefits to the producer fall into four classes of economies, he says:

1. Plant and property investments, including fewer bins, fewer screen sections, less but more modern machinery, less space required for stock piping.
2. Economical operation—no overlapping of sizes, fewer shut downs for changing screens, better economy in stock piling.
3. Capital losses, which are reduced through less financial loss due to obsolete material, and less financial loss due to obsolete equipment.
4. Good will of customer, which is increased through better quality product to customer and through better service to customer.

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